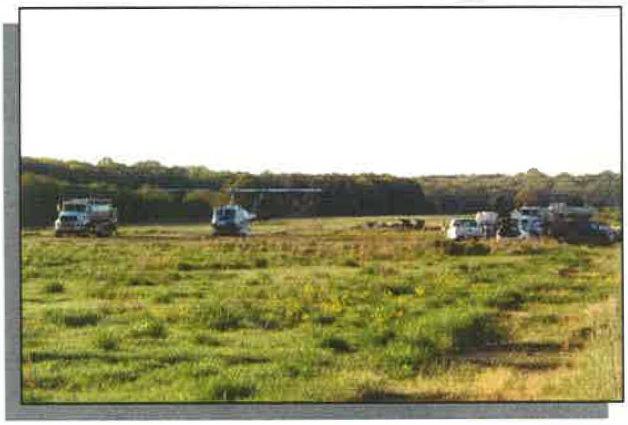
GYPSY MOTH SUPPRESSION PROJECT SUMMARY
at
BELTSVILLE AGRICULTURAL RESEARCH CENTER
GODDARD SPACE FLIGHT CENTER
JAMES J ROWLEY TRAINING CENTER
BALTIMORE-WASHINGTON PARKWAY
GREENBELT PARK
NATIONAL PLANT GERMPLASM AND BIOTECHNOLOGY LAB
NATIONAL PLANT MATERIALS CENTER
PATUXENT RESEARCH REFUGE
CATOCTIN MOUNTAIN PARK
MONOCACY NATIONAL BATTLEFIELD



April-May, 2003

Report by:
Rodney L. Whiteman, Forester

Graphics by:
Karen Felton, Biologist

Forest Health Protection
USDA Forest Service
Morgantown, WV

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Between April 30 and May 14, 2003, approximately 4,561 acres at ten federal sites in Maryland were aerially treated to reduce gypsy moth populations and to prevent defoliation. A single application of the biological insecticide Gypchek was applied at the rate of $4x10^{11}$ occlusion bodies per acre in a total formulation of 1 gallon per acre.

The ten federal sites that were treated are Beltsville Agricultural Research Center, Goddard Space Flight Center, James J. Rowley Training Center, Baltimore-Washington Parkway, Greenbelt Park, National Plant Germplasm and Biotechnology Laboratory, National Plant Materials Center, Patuxent Research Refuge, Catoctin Mountain Park and Monocacy National Battlefield. The first eight sites are located near Beltsville while Catoctin Mountain Park is located near Thurmont and Monocacy National Battlefield is located near Frederick.

One rotary-winged aircraft equipped with a Differentially Global Positioning System (DGPS) was used to apply the insecticide.

This report documents the spray equipment, insecticide, meteorological conditions, foliage and larval development, spray coverage and security measures for the project. Treatment efficacy will be reported once defoliation surveys are conducted in June and egg mass surveys are completed in the fall.

Aircraft and Spray Equipment

Contractor:	Helicopter Applicators, Inc.
Aircraft:	Bell UH-IH
FAA Number:	N658HA
Pilot:	Glenn Martin
DGPS Brand:	AG-NAV
Spray System:	Simplex
Nozzle Type:	AU 5000 Micronairs
Number of Nozzles:	8
Blade Angle:	35°
VRU Setting:	11
Application Rate:	128 ounces/acre

Boom Pressure:	30 PSI
Air Speed:	85 mph
Swath Width:	150 feet
Droplet VMD:	100-150 microns
Flow Rate:	25.76 gpm (calculated)
	25.88 gpm (actual)

Meteorological Conditions

Date	Time	Temperature Range	RH Range	Wind Speed Range	Wind Direction
4/30	0615-0841	52-62˚	49-70%	0-6 mph	N, NW
5/1	0930-1145	63-76˚	66-85%	0-6 mph	S, SE
5/4	0901-1157	56-63˚	45-65%	0-6 mph	E, NE, N
5/4	1845-1950	56-67˚	42-60%	0-3 mph	N
5/6	1815-1932	60-64˚	74-89%	1-3 mph	SE
5/7*	1115	70˚	80%	0-2 mph	W
5/14*	0625	52˚	56%	4-6 mph	W

A detailed list of weather conditions is enclosed in Appendix B.

* = Treatment consisted of a small block and lasted less than 15 minutes. Weather conditions were only monitored once.

Foliage and Larval Development

Date	Foliage Development		Larval Development
4/30 and 5/1	scarlet oak	70%	90% first instar
	white oak	30%	10% second instar
	red oak	60%	
5/4	scarlet oak	90%	46% first instar
	chestnut oak	75%	54% second instar
	white oak	40%	
	red oak	70%	
5/6	scarlet oak	100%	37% first instar
	chestnut oak	90%	63% second instar
	red oak	90%	
	white oak	60%	
5/7	chestnut oak	90%	24% first instar
	white oak	50%	75% second instar
	red oak	90%	1% third instar
5/14	chestnut oak	90%	6% first instar
	scarlet oak	90%	78% second instar
	black oak	90%	16% third instar

Spray Coverage

Based on observations made by personnel in the treatment blocks and by viewing the AG-NAV printouts (Appendix A), spray coverage was good. Skips in the spray blocks were minimal and very little area outside of the treatment blocks was sprayed.

There appears to be a skip in the spray coverage in blocks 8 and 13. However, this area is actually Powdermill Road. The pilot would shut off the spray boom while flying over this busy road. The largest area outside of a treatment block that was sprayed occurred at Greenbelt Park (block 1). While treating block 1, the pilot was momentarily distracted by two military helicopters that were in close proximity to the spray aircraft and didn't shut off the spray boom when exiting the treatment block. This area outside the treatment block that was sprayed accounts for only a few acres.

Security

To prevent tampering with the spray material, it was stored in a secure fenced area in tamper proof containers or remained under control of Forest Service personnel. The only access inside the fenced area was through two electronic keyed gates. Security from Beltsville Agricultural Research Center also patrolled this fenced area. All loading and mixing was done under supervision of Forest Service personnel. The helicopter was disabled between spray sessions to prevent use by unauthorized personnel. Only authorized personnel were allowed at the helispot/staging area, which was also located in the fenced area.

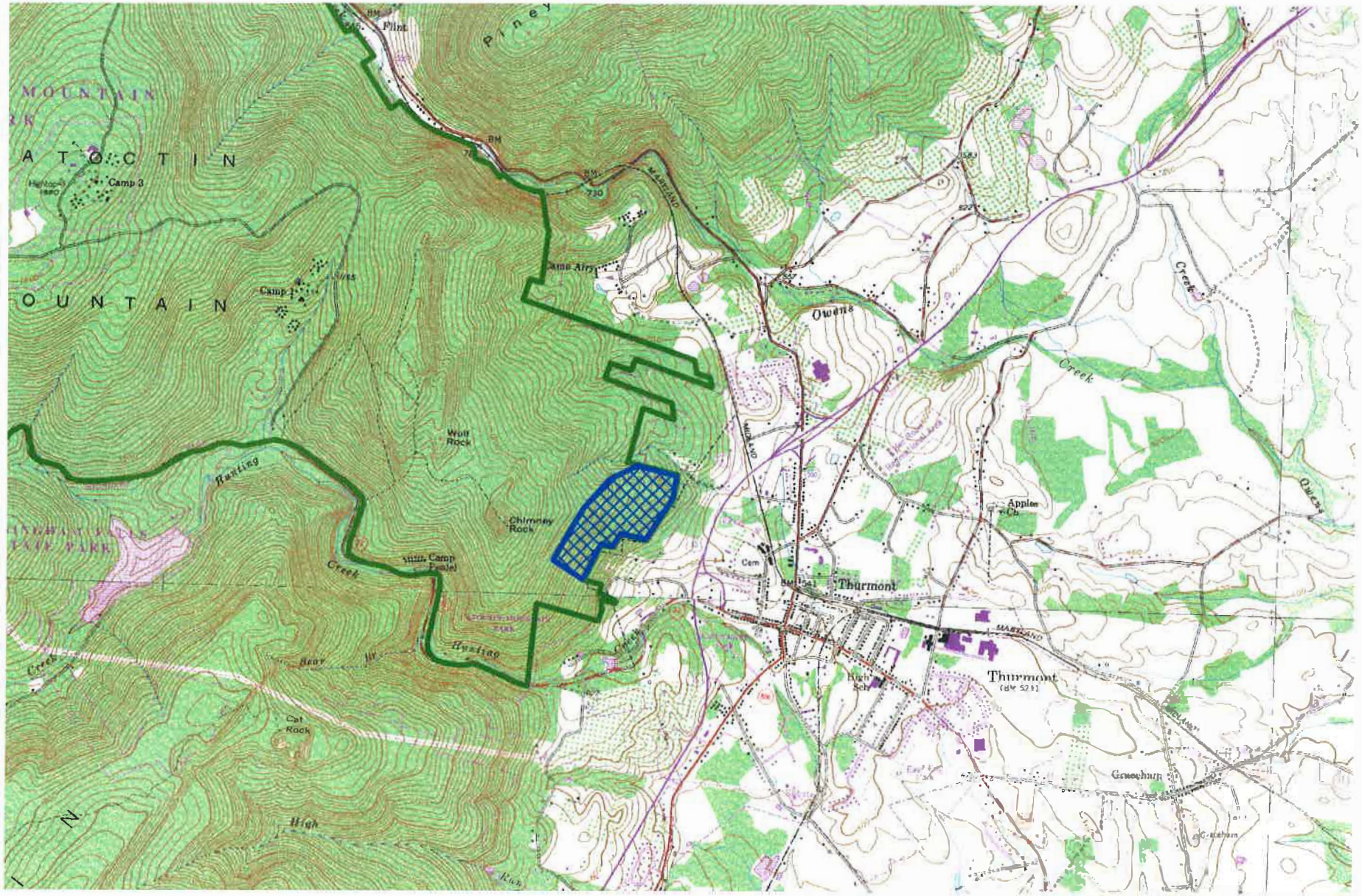
All or portions of blocks 1-13 and the spray block at Catoctin Mountain Park were located within restricted airspace. A waiver was obtained through TSA to fly in the Washington, D.C. Flight Restricted Zone (Figure 3) in order to treat blocks 1-13. A waiver to fly into P-40 was obtained through the FAA and the USSS in order to treat at Catoctin Mountain Park. Flight into both of these airspaces was monitored by the FAA.

Narrative

This suppression project involved cooperation and coordination between ten federal sites, the USDA Forest Service and a private contractor, Helicopter Applicators, Inc. The treatment operations near Beltsville were also coordinated with the Transportation Security Administration (TSA) and the Federal Aviation Administration (FAA) while the treatment at Catoctin Mountain Park was coordinated with the United States Secret Service (USSS) and the FAA.

The suppression project had a total of seventeen spray blocks. One spray block was located at Catoctin Mountain Park (Figure 1), one was located at Monocacy National Battlefield (Figure 2) and the other 15 treatment blocks were located at the eight sites near Beltsville (Figure 3). The project helispot/staging area was located at the abandoned Beltsville Airport (shown also in Figure 3).

Figure 1.--Treatment area at Catoctin Mountain Park in 2003.



Catoctin Mountain Park boundary

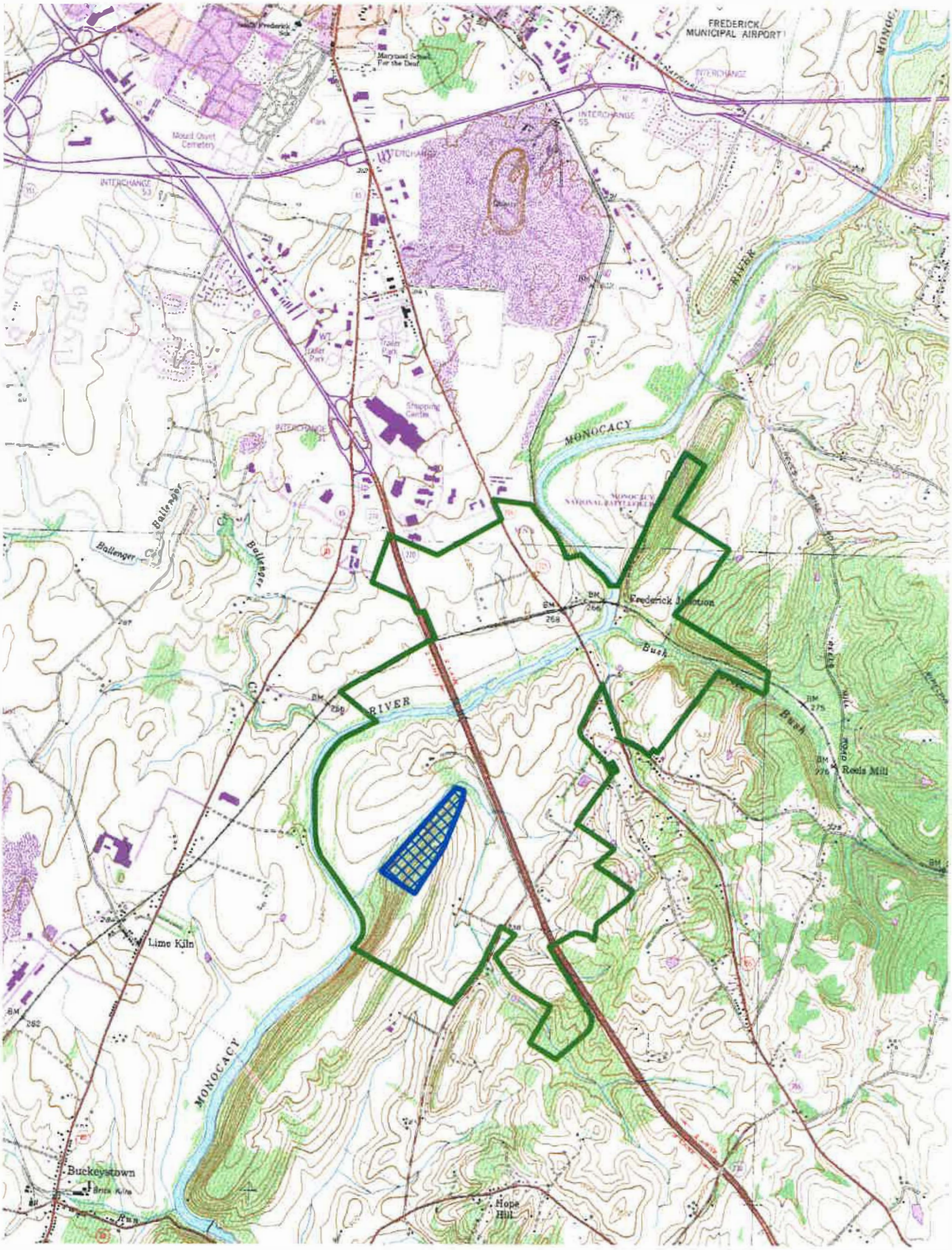
Treatment area in 2003 - 67 acres

0.5 0 0.5 1 Miles

USDA Forest Service, FHP, S&PF, NA, Morgantown, WV

1/03 KDF

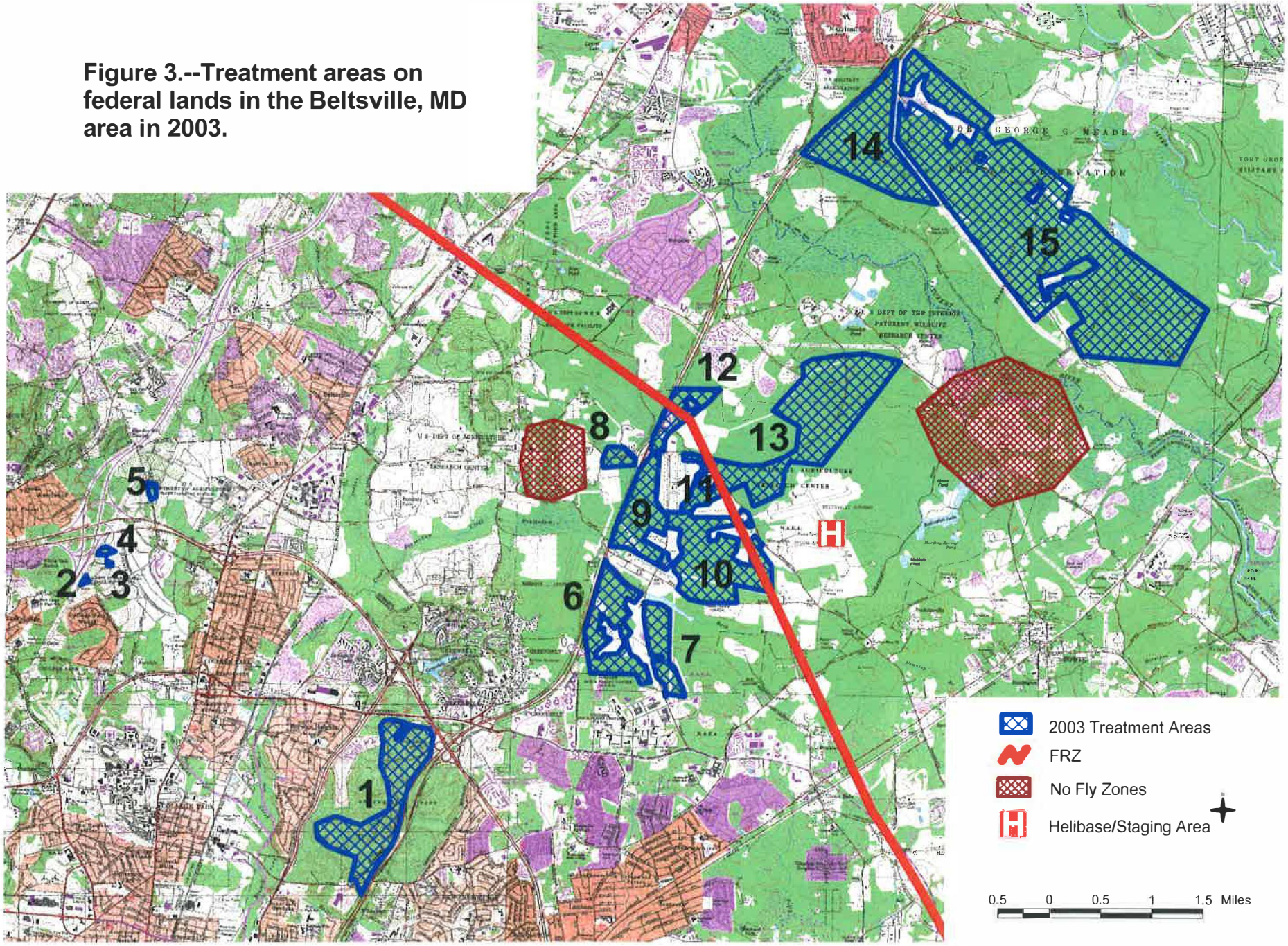
Figure 2.--Treatment area at Monocacy National Battlefield in 2003.



USDA Forest Service, FHP, S&PF, NA, Morgantown, WV

1/03 KDF

Figure 3.--Treatment areas on federal lands in the Beltsville, MD area in 2003.



USDA Forest Service, FHP, S&PF, NA, Morgantown, WV

KDF 5/03

The project commenced on the morning of April 30 at 0611 and was terminated for the day at 0846 due to increasing winds (5-6 mph) and decreasing relative humidity (49%). A total of 805 acres was treated for the day and included Blocks 1, 2, 3, 4, 5, 8 and 10. A total of 0.03 inches of rain occurred within 3 days following treatment of these blocks.

In the early morning hours of May 1, the project area experienced a very brief and light shower. Treatment was delayed until 0930 to allow the foliage to dry. Treatment on this morning lasted until 1146 and was terminated due to increasing winds (4-6 mph) and increasing temperature (76°). A total of 830 acres were treated for the day and included blocks 9, 11 and 13. No precipitation occurred within 3 days following the treatment of these blocks. However, no treatments were conducted on May 2 and 3 since rain was predicted for both those days.

After a brief shower on the morning of May 4, treatment resumed at 0859 with blocks 6, 7, 12 and 14 being completed along with a portion of block 15. Treatment was terminated at 1213 due to low relative humidity (45%) and increasing winds (4-6 mph). The suppression project continued that evening when more of block 15 was treated. A total of 1,943 acres was treated for the day. A total of 0.43 inches of rain occurred within 3 days following the treatment of these blocks. No treatments were conducted on May 5 or the morning of May 6 since rain was predicted.

Treatment resumed on the evening of May 6 at 1813 and was completed at 1951 when block 15 was finished. A total of 876 acres was treated for the day. All fifteen of the treatment blocks near Beltsville have been treated. A total of 0.59 inches of rain occurred over the next 3 days following treatment of this block.

Only Monocacy National Battlefield and Catoctin Mountain Park were left for treatment. The P-40 waiver that was needed to fly into the restricted airspace at Catoctin Mountain Park had not been obtained by May 7 so treatment at that site would be at a later date. Even though it was likely that Monocacy National Battlefield would receive rain by early evening, it was decided to treat at that site due to the advanced development of the larvae. Delayed by fog until late morning, this 40 acre block was sprayed in 7 minutes from 1111 to 1118. A total of 0.59 inches of rain occurred over the next 3 days following treatment of this block.

The P-40 waiver was finally obtained on the afternoon of May 9. Rain was forecasted for May 10 and 11 so the treatment at Catoctin Mountain Park was scheduled for May 12. Winds in excess of 15 mph forced the cancellation of treatment on May 12 and 13.

The 67 acre block at Catoctin Mountain Park was finally sprayed on the morning of May 14 from 0621 to 0634. The suppression project at these ten federal sites was now complete. Although a total of 5.27 inches of rain occurred over the next 3 days following treatment of this block, no rain occurred until the third day after treatment. Daily rainfall totals are listed in Appendix C.

A total of 23 sorties were flown to treat 4,561 acres. The daily sortie reports are enclosed in Appendix D. Treatment timing based on larval and foliage development was good at

the eight sites near Beltsville and fair at Monocacy National Battlefield and Catoctin Mountain Park. The only incident on the project occurred on the evening of May 6. The spray aircraft accidentally flew through the no-fly zone that encompasses the propagation area for the Mississippi Sand Hill Crane and Whooping Crane. Fortunately this intrusion into the no-fly zone appeared to have no adverse effects on these endangered birds.

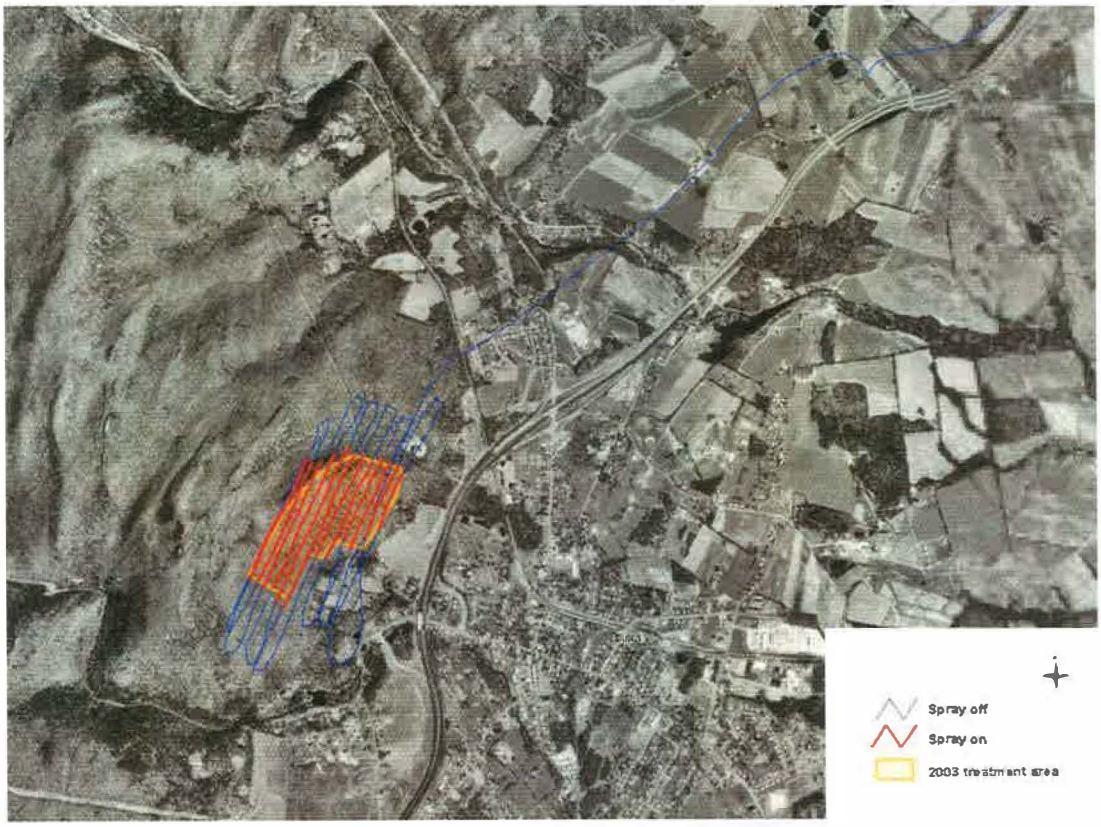
No problems were encountered with the spray equipment, ground support equipment and /or personnel provided by the contractor, Helicopter Applicators, Inc. The production rate of 453 acres per hour at the eight sites near Beltsville exceeded the contract requirement of 400 acres per hour at these eight sites. Likewise, the production rate of 321 acres per hour at Catoctin Mountain Park and Monocacy National Battlefield exceeded the contract requirement of 250 acres per hour.

As stated previously, treatment efficacy will be evaluated through a defoliation survey conducted in June and an egg mass survey this fall. The suppression project will be considered successful if the goals of preventing noticeable defoliation on less than 20 percent of the treatment area and reducing residual gypsy moth populations below the treatment threshold on at least 80 percent of the treatment area.

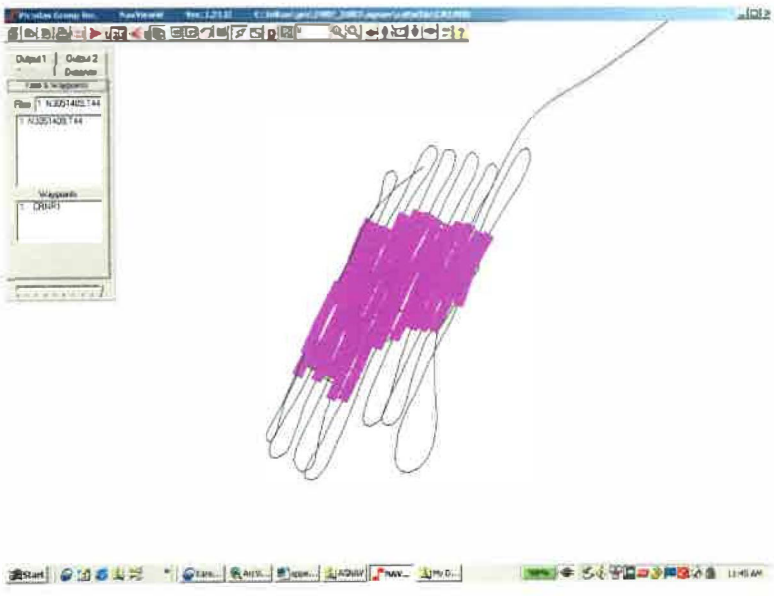
APPENDIX A

AG-NAV PRINTOUTS

Appendix A.—Gypsy moth suppression project at Catoctin Mountain Park, 1 application of Gypchek, May 14, 2003.



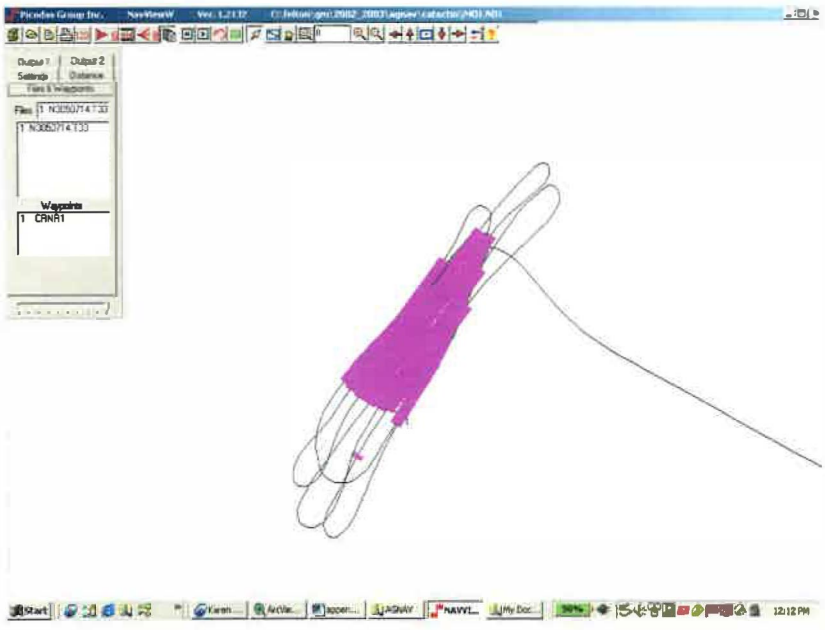
AG-NAV log files



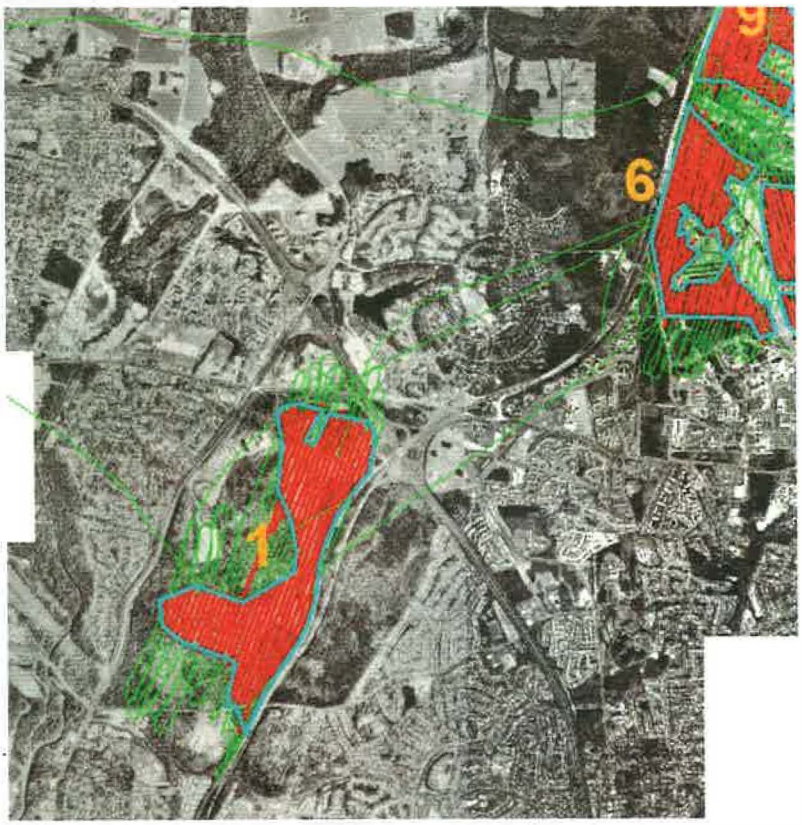
Appendix A.—Gypsy moth suppression project at Monocacy National Battlefield, 1 application of Gypchek, May 7, 2003.

Spray off
Spray on
2003 treatment area

AG-NAV log files

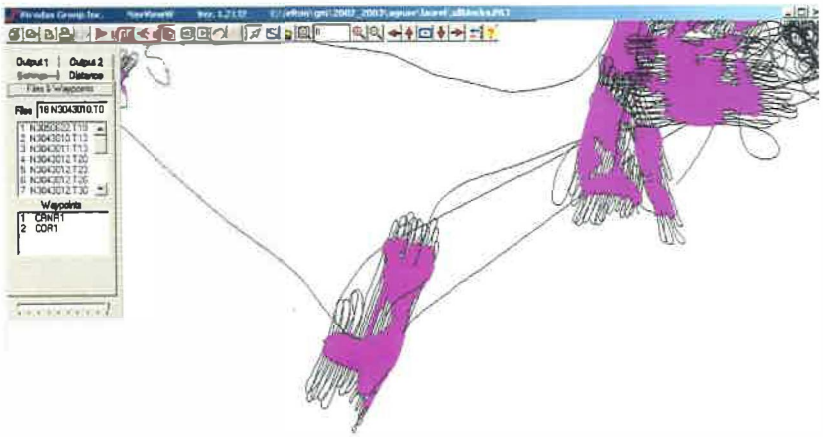


Appendix A.—Gypsy moth suppression project on federal lands in the Beltsville, MD area, 1 application of Gypchek, Block 1, April 30, 2003.



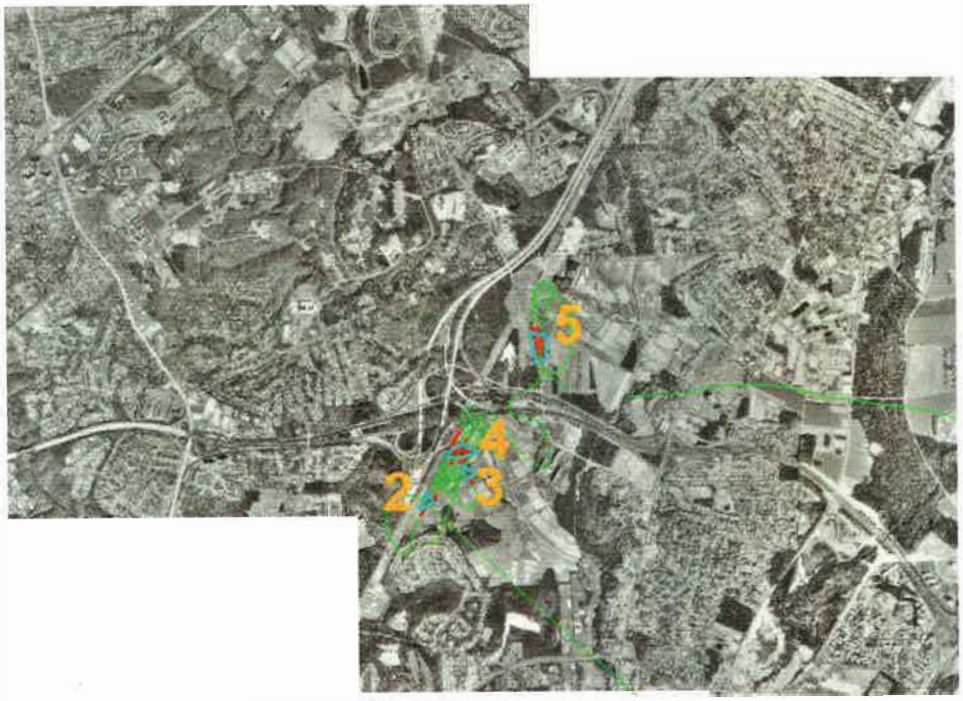
2003 treatment blocks
Spray off
Spray on

AG-NAV log files



Spray block 1

Appendix A.—Gypsy moth suppression project on federal lands in the Beltsville, MD area, 1 application of Gypchek, Blocks 2, 3, 4, and 5, April 30, 2003.

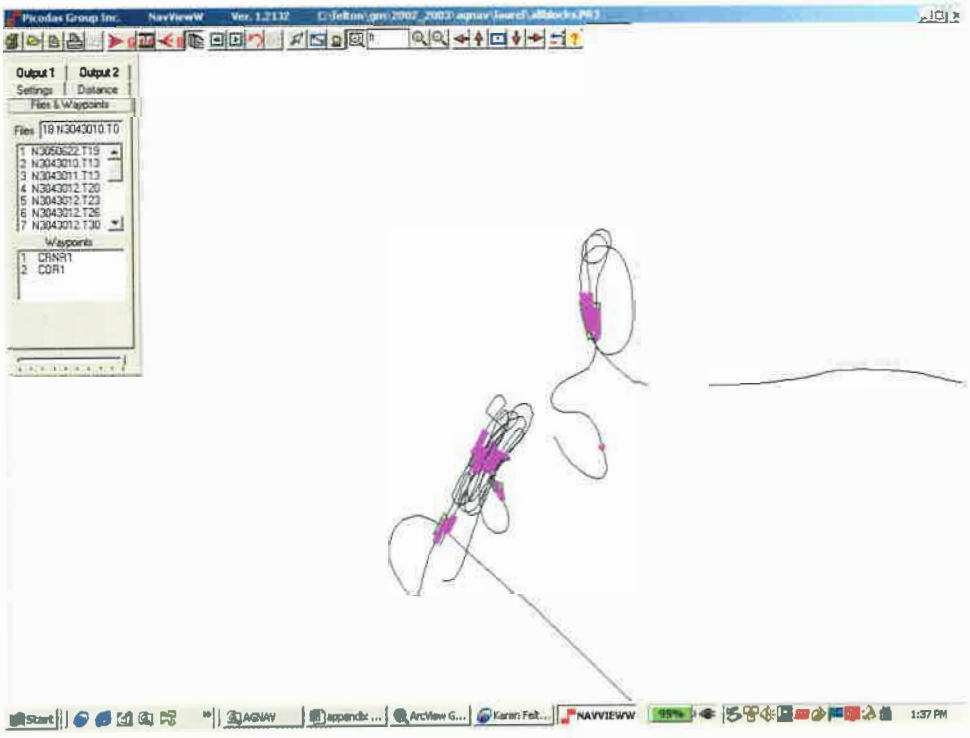


2003 treatment blocks

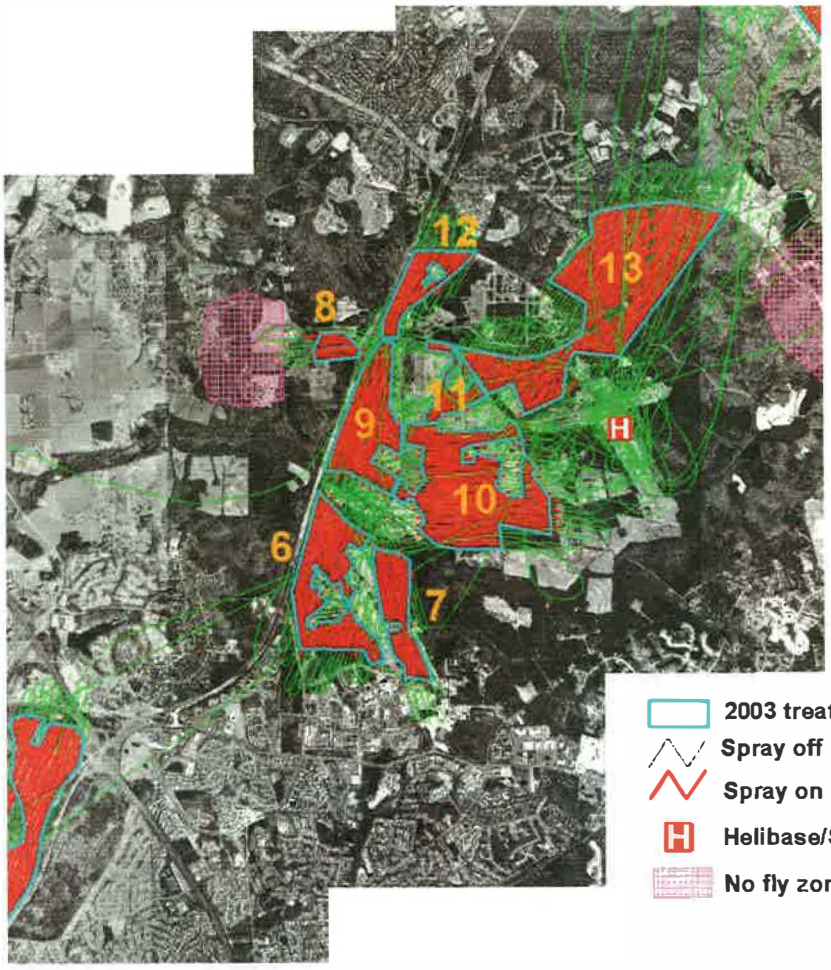
Spray off

Spray on

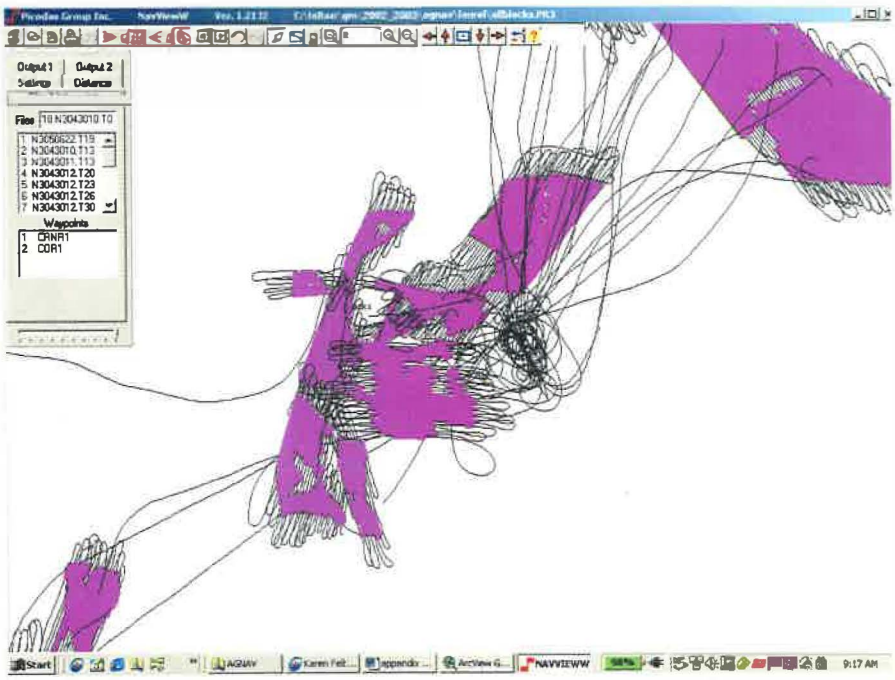
AG-NAV log files



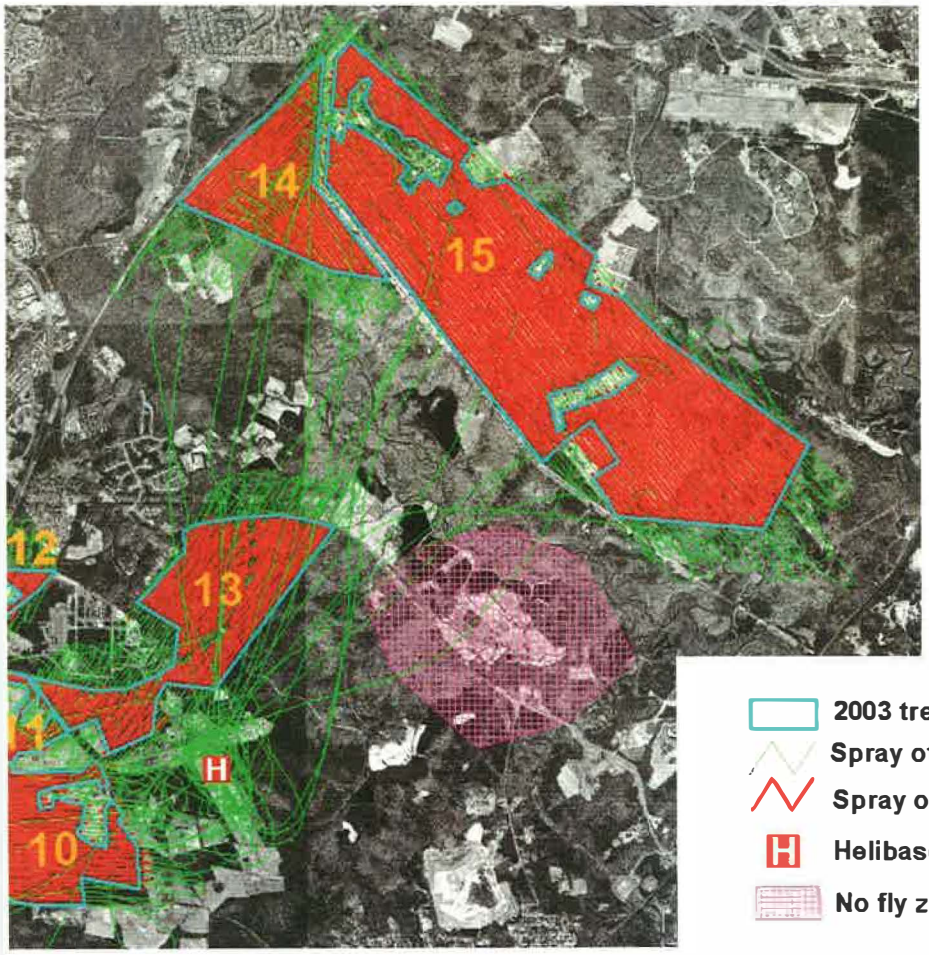
Appendix A.—Gypsy moth suppression project on federal lands in the Beltsville, MD area, 1 application of Gypchek, Blocks 6, 7, 8, 9, 10, 11, 12, and 13, April 30, May 1 and 4, 2003.



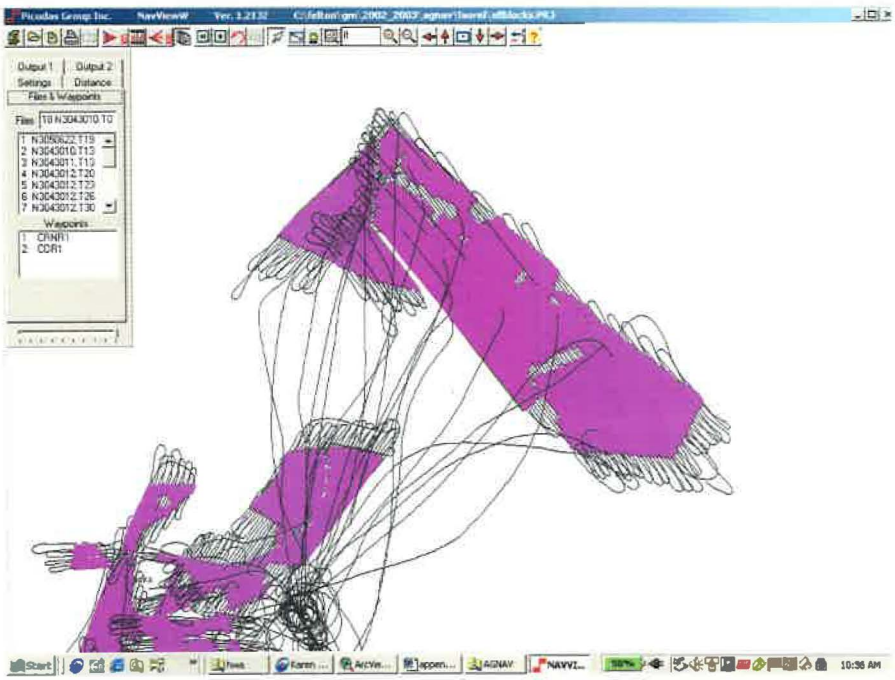
AG-NAV log files



Appendix A.—Gypsy moth suppression project on federal lands in the Beltsville, MD area, 1 application of Gypchek, Blocks 14 and 15, May 4 and 6, 2003.



2003 treatment blocks
Spray off
Spray on
H Helibase/Staging Area
No fly zones



APPENDIX B

METEOROLOGICAL CONDITIONS DURING TREATMENT

Meteorological Conditions During Treatment

Date	Time	Temperature	RH	Wind Speed	Wind Direction
4/30	0615	52° F	69%	0 mph	--
4/30	0640	54° F	70%	0 mph	--
4/30	0718	57° F	60%	1-2 mph	NW
4/30	0808	58° F	52%	3-4 mph	N
4/30	0830	61° F	51%	3-4 mph	N
4/30	0841	62° F	49%	5-6 mph	N
5/1	0930	63° F	85%	2-4 mph	SE
5/1	1011	64° F	83%	2-3 mph	SE
5/1	1053	69° F	77%	0-1 mph	S
5/1	1121	76° F	71%	4-5 mph	S
5/1	1145	76° F	66%	4-6 mph	S
5/4	0901	56° F	65%	1-2 mph	E
5/4	0943	58° F	65%	0-1 mph	E
5/4	1021	62° F	57%	0-2 mph	NE
5/4	1050	62° F	54%	0-3 mph	N
5/4	1133	59° F	48%	4-6 mph	N
5/4	1157	63° F	45%	4-6 mph	N
5/4	1845	67° F	42%	0-2 mph	N
5/4	1909	63° F	45%	0-3 mph	N
5/4	1924	59° F	56%	0-1 mph	N
5/4	1950	56° F	60%	0-2 mph	N
5/6	1815	64° F	74%	1-3 mph	SE
5/6	1840	61° F	84%	2-3 mph	SE
5/6	1902	60° F	85%	2-3 mph	SE
5/6	1932	60° F	89%	2-3 mph	SE
5/7	1115	70° F	80%	0-2 mph	W
5/14	0625	52° F	56%	4-6 mph	W

APPENDIX C

RAINFALL AMOUNTS AFTER TREATMENT

Rainfall Amount after Treatment

Date	Rainfall Amount
5/1	.03″
5/2	.00″
5/3	.00″
5/4	.00″
5/5	.13″
5/6	.04″
5/7	.26″
5/8	.08″
5/9	.25″
5/10	.19″
5/11	.00″
5/12	.07″
5/13	.02″
5/14	.00″
5/15	.00″
5/16	5.27″
5/17	.16

APPENDIX D

DAILY SORTIE REPORTS

DAILY SORTIE REPORT

Project coordinator:
Date: 4/30/03
Aircraft ID: 6558HA

Location: 8 Federal sites near Laurel
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	190	0611	0631	190	10
2	189	0639	0706	189	10
3	213	0717	0800	213	1
4	213	0805	0846	213	1,2,3,4,5,8
				805	

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Treated a total of 805 acres for the day.

SIGNATURES
Project Coordinator: Audrey L Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/90

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/1/03
Aircraft ID: 658HA

Location: 8 ~~federal~~ sites near Laurel
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	193	0930	1004	193	9
2	213	1009	1047	213	11, 13
3	212	1051	1113	212	13
4	212	1119	1146	212	13
				830	

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Weather delay (wet foliage, low clouds) until 0930
Treated a total of 830 acres for the day.

SIGNATURES
Project Coordinator: Rodney A Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/90

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/4/03
Aircraft ID: 658HA

Location: Federal sites near Laurel
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	204	0859	0935	204	7, 12
2	221	0940	1014	221	6
3	211	1017	1044	211	14
4	211	1048	1124	211	14
5	220	1129	1150	220	15
6	219	1154	1213	219	15
7	230	1847	1911	219	15
8	230	1914	1935	219	15
9	230	1938	2000	219	15
				1943	

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Late start due to brief shower / potential for rain

Treated a total of 1943 acres for the day

SIGNATURES
Project Coordinator: Rodney A Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/80

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/6/03
Location: 8 federal sites near Laurel
Aircraft ID: 658HA
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	219	1813	1830	219	15
2	219	1839	1857	219	15
3	219	1901	1925	219	15
4	219	1928	1951	219	15
				876	

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

SIGNATURES
Project Coordinator: Rodney L. Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/90

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/7/03
Aircraft ID: 658HA

Location: 8 Federal sites near Locust / MNB
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	40	1040	N/A	40	MON. NB

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Ferried from BARC to Monocacy National Battlefield
Delay until 1040 due to fog

Actual treatment time 1111 to 1115

SIGNATURES
Project Coordinator: Rodney L. W. Whiteman
Contractors Representative: Glenn Martin

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/14/03
Aircraft ID: 658HA

Location: CMP
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	67	621	0634	6.7	CMP

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Project is now complete.

SIGNATURES
Project Coordinator: Rodney L Whiteman

Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/90